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ABSTRACT

Fifty-two cost reduction efforts on college and university campuses are described, as part of the Cost Reduction Incentive Awards Program sponsored by the National Association of College and University Business Officers and the United States Steel Foundation. The incentive program is designed to stimulate cost-effective ideas and awareness of the use of financial, human, and natural resources on campus. While some aspects of a program may be unique to a particular institution, creative administrators may tailor the programs to their schools. Notable programs, some of which received prizes up to $10,000, include: Southern Methodist University's saving of more than $21,000 a year by using a computerized parking citation system using hand-held minicomputers; Kansas Newman College's saving of more than $20,000 by the use of asbestos encapsulation rather than removal of asbestos ceilings; Duke University Medical Center's savings of almost $67,000 by using a mail registration system for campus parking. Additional programs concerned: chemical spill-control kits, gas line survey, training campus police by videotapes, building operator training and development, energy saving steam traps, and monitored purchases of lower-cost fuel for vehicles. A list of all 1985 incentive program participants is included. (SW)

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1985 WINNERS OF THE COST REDUCTION INCENTIVE AWARDS

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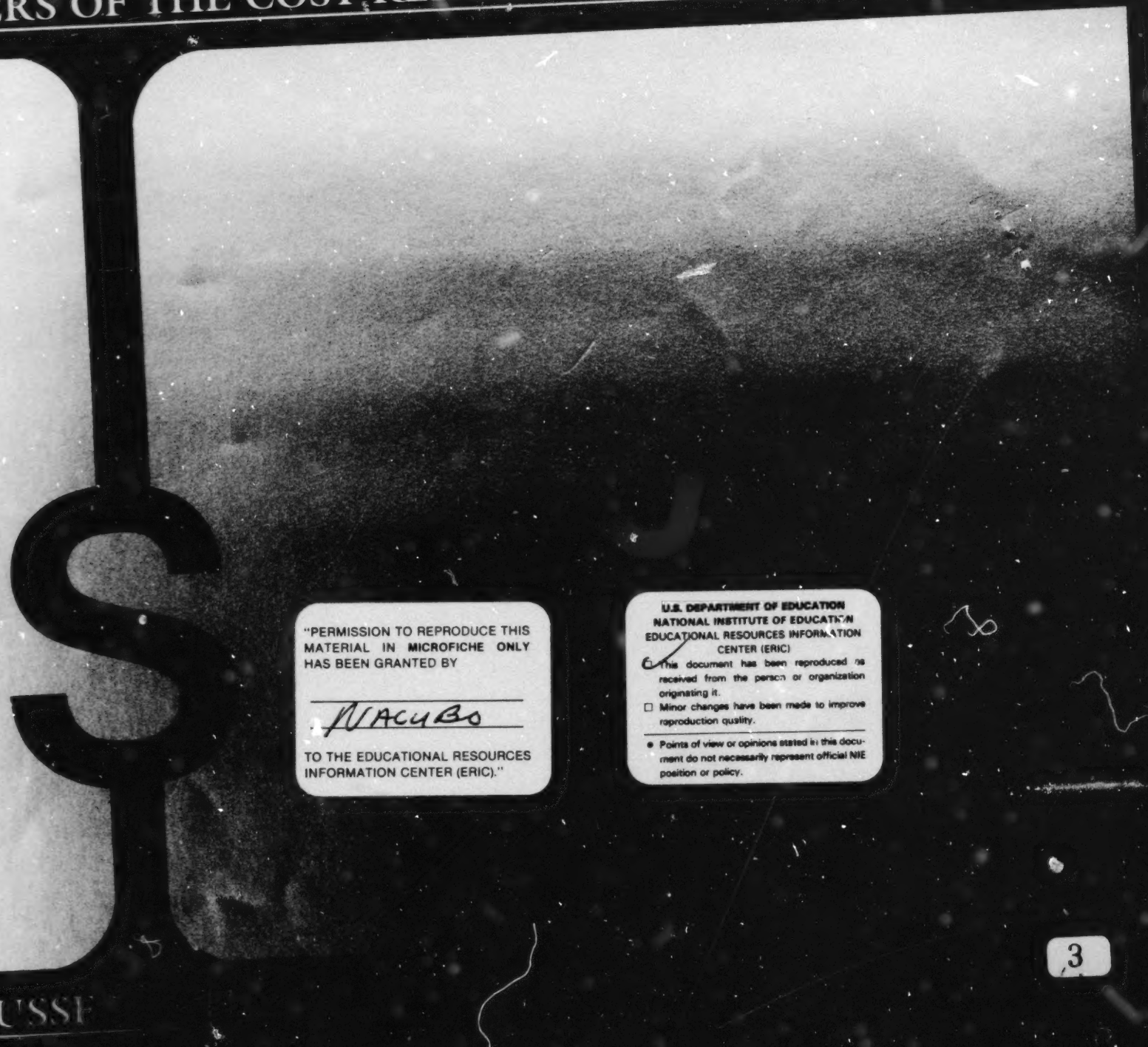

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NACUBO/USSF Cost Reduction Incentive Awards

The National Association of College and University Business Officers (NACUBO) and the United States Steel Foundation, Inc. (USSF) are proud to announce the winners of the tenth annual Cost Reduction Incentive Awards Program and to publish these innovative ideas. Forty-five institutions received monetary awards ranging from $10,000 to $100. Honorable mention awards went to eight institutions.

The awards recognize outstanding cost reduction programs implemented during calendar year 1984. NACUBO and USSF recognize these as worthy ideas although they can offer no assurance that the ideas will function for others and in other situations.

The means of cost reduction presented in this booklet are saving money for the institutions named. While some aspects of a program may be unique to a particular institution, creative administrators are challenged to tailor the programs to meet special requirements of their institution.

NACUBO and USSF urge you to circulate this publication to persons on your campus who have responsibility in such areas as energy, financing, personnel, computer operations, and others mentioned herein. It is hoped that this booklet will encourage you in making efforts to reduce costs at your own institution.

Additional information may be obtained from NACUBO, ATTN: Information Exchange Coordinator, One Dupont Circle, Suite 500, Washington, D.C. 20036-1178; 202-861-2518.

Cost Reduction Incentive Awards Selection Committee

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Computerized Parking Violation Report System

Southern Methodist University

A computerized system of issuing parking citations using hand-held minicomputers instead of the traditional ticket book, was installed at Southern Methodist University. Eliminating the time-consuming manual entries into the main system *saves the university more than $21,000 a year.*

Previously, officers wrote paper citations for campus traffic and parking violations and clerks then entered these items into the main data system. This process required an average of ten work hours a day for thirty days each month. A university study showed that use of minicomputers could make the system more efficient.

Five minicomputers were purchased, and a program was written, debugged, and tested. The system was simplified such that operation of the machines was virtually self-explanatory. Most officers could be trained to use a minicomputer in one hour and have increased productivity while using the machines. This was seen as a bonus since the program was not necessarily intended to save time in writing citations in the field but to streamline the processing of information into the university mainframe.

Officers carry the minicomputers with them on the job and enter all the data on each citation onto microcassettes. Once daily all data is transmitted electronically via a telephone modem to the university master system. All necessary information, from the facts of a particular case to data necessary for charging student accounts to appeals information, can be entered quickly in that brief operation.

An information program was used to educate the university community on the new computer-generated citations, and the response has been positive. The minicomputers cost about $650 each and are estimated to be used for a minimum of five years.

Encapsulation of Asbestos Ceilings

Kansas Newman College

Kansas Newman College successfully completed work on a solution to an asbestos ceiling problem by using asbestos encapsulation. A dormitory built in 1960 had asbestos on all room and hallway ceilings and the *savings of* encapsulation over the alternative of completely removing the ceilings were *more than $20,000.*

The encapsulant used by the college is a heavy vinyl acrylic latex that meets requirements established by the EPA for an effective sealant. The sealant provides a tough, flexible membrane that allows the asbestos coating to retain its insulative and acoustical value. An airless spray was used to make three to four applications. This type of application allows a continuous film to be formed over the asbestos material so that no fibers can be loosened; thus, the operation can be carried out in high use areas of an institution without shutting down normal functions.

Safety precautions still need to be followed and can be found in EPA Guidance Documents. However, no special clothing, equipment, or means of disposal are needed as with a complete removal process. If any damage occurs to the ceiling after treatment, the affected area can simply be recoated. Inspections of the treated dormitory have satisfied university administrators that both the process of encapsulation and the product used are safe and effective.

Savings calculated for encapsulation were based on a quotation for removing the asbestos at $2 per square foot versus 55 cents per square foot for the encapsulant. Flat latex paint could also have been applied but would have required additional coatings. College administrators plan to use the treatment in other areas to reduce the asbestos health hazard in a cost-efficient manner.

Vehicle Registration by Mail

Duke University Medical Center

Registering vehicles for campus parking required much time of personnel in the traffic and parking department at the Duke University Medical Center during August and September. Establishing a mail registration system resulted in *savings of almost $67,000* and made the process much more convenient for registrants.

The Medical Center estimated that approximately one hour was needed to register a vehicle for each of about 7,500 employees. The estimate included time taken from a job to get from the employee's work station to the traffic and parking office, to register (probably after standing in long lines), and to return to work. Based on average wage rates for both hourly and salaried employees, supplied by the director of administration, the hour taken from a job was costly to the center. In addition, two temporary employees were needed for the months of August and September to handle the extra work load.

For the new mail registration system, the department used a personal computer to prepare the form letter and registration material sent to employees. The material was mailed through campus post facilities and simply replaced a registration announcement letter that had been sent to employees in previous years. Medical Center

employees have indicated their appreciation of the convenience of mail registration, and the traffic and parking department no longer must deal with an annual extra work load.

Microcomputer and Peripheral Equipment Maintenance Program

Columbia University

Columbia University centralized the maintenance of more than forty different types of university-owned computer equipment through one on-site service firm. Service is improved, and the university can monitor and control its expenditures in this area, ***saving more than $323,000 a year***.

A study by the university in 1984 estimated that about $1 million would be spent on microcomputer and peripheral equipment maintenance that year. Schools and departments procured their own maintenance through the manufacturer's service division or third party service firms, and this decentralized purchasing resulted in higher expenditures than would centralizing the function.

A new maintenance program was developed, which involved bringing one firm into an on-site service center, formulating a services and procedures manual, developing a management reporting system, and creating a consolidated billing system for charging all maintenance expenditures. The firm that won the bid is able to service 93% of the university's wide variety of computer equipment and respond within a maximum period of three hours at prices approximately 25–35% below manufacturers' service rates.

In using the program, a school or department may call a toll free number and request a service technician to inspect and repair its equipment. The technician brings an authorization form which department personnel complete with an account number and authorized signature. The controller's office receives a consolidated bill from the maintenance firm each month and then remits one check to the firm and redistributes expenses to using departments by account numbers.

Campus Police Trained By Video Tapes

Indiana University-Purdue University at Indianapolis

It is difficult for campus law enforcement agencies to operate efficiently when available staff is reduced by sending officers to in-service training programs. Thus, Indiana University-Purdue University at Indianapolis implemented a way to provide effective training through using video tape presentations.

The tapes succeed in various ways: (1) They can be presented during normal work hours, so that officers are available for emergencies; (2) each officer receives identical training; (3) the tapes can be used over and over, as refresher courses, as well as for first-time instruction; and (4) department administration retains control over the material and the way it is presented.

The department already had acquired equipment for taping interviews and recording breath tests. The training tapes were produced in-house using the department's own certified instructors in some cases and, in others, an outside instructor taping with departmental equipment. The tapes can be tailored to department needs, with personnel being trained in areas in which they may be deficient and with emphasis on problems peculiar to a specific institution. This aspect of the program is an advantage over commercially produced tapes, which were expensive and designed to reach too broad an audience.

The department saves paying overtime for officers to attend classroom instruction. The cost of outside instructors can be greatly reduced. The department expects to ***save more than $13,000 a year*** as it moves to a full complement of 12 subjects annually.

Chemical Spill-Control Kits

Iowa State University

Iowa State University developed a chemical spill-control kit that is inexpensive and easy to use, as well as to replenish. The ***savings are more than***

$13,000 a year over using expensive, commercial spill-control kits.

The university has about 900 laboratories with average reported hazardous chemical spills of two per month, but it is estimated that twice that many go unreported and are handled in a less-than-satisfactory manner. A survey of the laboratories showed that about 500 were not equipped to handle a spill.

Supervisors indicated that commercial spill-control kits were too expensive either to buy initially or to replace when used up, and that often just one kit did not meet the needs of a laboratory. The average price of a commercial kit was more than $81. Such kits are designed to absorb about 6 liters of spillage, though there is a wide variation in absorbency and in the types of chemicals that can be handled.

The university prepared its own kit, using calcium bentonite in a five-gallon plastic bucket that also contains two pairs of neoprene gloves, two polyethylene bags for disposal purposes, hazardous waste labels, and emergency guidelines. The bucket is equipped with a lid and carrying handles. The cost of materials plus labor was $18.60 per kit.

Gas Line Survey Program

Texas Tech University

The objective of the gas line survey program at Texas Tech University is the early detection of natural gas leaks in university-owned, underground lines. Scheduled surveys are made by trained crews using specific instruments instead of relying on odor or blackened earth to locate leaks. By detecting leaks early, the university ***saves more than $80,000 a year***.

The university has about 48,000 linear feet of underground gas lines, much of it installed more than forty years ago. A rise in natural gas prices and increased observation of odor and discolored earth persuaded the institution to develop a systematic program of leak detection. Contracting with private industry for such service was rejected because in-house personnel still would be needed to locate the lines; further, an in-house approach to the problem allowed greater flexibility in that instruments would be available to confirm suspected leaks at times other than during scheduled surveys.

The gas supplier offered guidance on instrument acquisition and provided necessary training free of charge. Cost of two pieces of equipment to do both broad-scope and pinpoint detection was $4,235.

Two surveys were conducted in 1984. A total of seven major and numerous minor leaks (otherwise undetectable) were located and repaired as a result of these surveys. During repair operations, the system was upgraded by rerouting some of the lines to reduce length and by replacing steel pipe with plastic pipe.

The operating skills are easily acquired by any tradesperson, but because of the sensitivity of the instruments, their custody and use is limited to trained personnel.

Nuclear Roof Survey

University of Pennsylvania

The University of Pennsylvania uses a nuclear scan device to detect the presence and concentration of moisture within a roofing system. The results are mapped on a layout of the roof to illustrate the locations and severity of moisture penetrations. Evaluations can then be made as to the scope of repairs. Using the survey with three buildings ***saved the university more than $125,000*** over more time-consuming and labor-intensive methods used the previous year.

A layout drawing of the roof showing openings, curbs, drains, joints, projections, and existing patches is made and a grid added to the drawing. Grid spacing is about 5 to 6 feet for preventive maintenance, about 2 to 3 feet if many patches are involved. The proposed grid system is transferred onto the actual roof area with chalk lines. At each intersection a reading is taken with a neutron generator mounted on a small wheeled cart. The cart also has a counting tube, a readout device, and other intermediate electronic gear. Power is supplied by a battery pack or a power line to the roof.

After the field operation, the results are analyzed. A contour map of the roof is produced, based on the counts per minutes registered at each point of measurement by the radiation equipment; this indicates the amount of moisture present. Roof condition analysis is based on the contour map and the visual inspection report of the operators, and severe problems can be corrected at once while those less important may be treated as the maintenance budget permits.

The nuclear scan process is nondestructive since no test cuts must be made. It is better than infrared thermography which requires core samples to validate results and often is affected by solar radiation.

Special Roof Repairs to Reduce Cooling Costs

Bethune-Cookman College

Special fiberglass, self-sealing shingle roofs were applied to three buildings at Bethune-Cookman College. The shingled roofs are designed with air vents that cool the roof and thereby reduce the need to operate air conditioning below 70 degrees. Energy ***savings in those buildings are more than $10,000 a year***.

The three buildings chosen for the initial project had heavy student/faculty use, were much older than other campus buidings, and housed computers and scientific and medical research equipment. Thus, they had high-energy use requirements for cooling in the warm Florida climate.

Since the cost of cooling had risen as much as 25% over the past five years, college administrators determined that energy conservation was a primary objective in any repair or replacement. The fiberglass roof shingles also were durable and cost-effective in terms of material and labor.

Small Cogenerators

Hampshire College

Hampshire College installed two propane-fired cogenerators to provide domestic hot water for two large dormitories and the dining commons, space heating for the dining commons, and a fraction of the electrical requirements of the college. This installation ***saves the college $78,500 a year*** in energy costs.

The college has an all-electric campus and has seen the cost of electricity increase by a factor of 12 in the last 15 years. Two 60 kilowatt cogenerators using propane gas were installed in the dormitory basements. The heat output is captured by a working fluid (water) and can be transferred to the domestic hot water stream and also used for space heating. The electrical energy produced by the cogenerators is fed directly into the distribution grid of the dormitories.

The units are not stand-alone generators, but they provide about 90% of the domestic hot water needs for 500 students in the dormitories and a kitchen. They also provide about half the heating requirements of the dining commons.

Swimming Pool Cogeneration

Harvard University

As a byproduct of maintaining the temperature in its swimming pool, Harvard University also produces 60 kilowatt hours of electricity for each hour of operation using a cogenerator. The *savings to the university in energy costs are $25,000 a year.*

The cost of maintaining pool temperature, using the large distribution system from a central heating plant, had become very expensive during warmer months when the heating load is light. Thus, the university sought to place a heat-generating plant within the building. Use of a gas-fired cogenerator proved to be no more costly in the winter months than use of the larger distribution system, it was much less expensive than steam in the summer months, and in addition electricity is generated to be used in other campus buildings. The cogenerator uses an internal combustion engine designed for long-term industrial use.

About 26% of the fuel's energy is converted into electrical energy. The combined electrical and heating efficiency is 83%. The return on investment is $4.60 per hour of operation of the cogeneration unit. Since there is some availabile capacity, the university is now considering connecting hot water heating to the cogenerating unit.

A New Organizational Model for Dormitory Security

Hofstra University

Resident students at Hofstra University enjoy greater security within dormitory buildings due to the implementation of a student security hierarchy. Detection of unauthorized entrants has improved by 550% while the university realizes annual *savings of more than $350,000* in not contracting for guard services.

Previously, student aides at desks in residence entrances performed multiple duties, such as answering telephones and issuing recreational equipment. Unauthorized persons often could enter unnoticed. Redesign of lobbies as core entranceways and creation of a new organizational hierarchy with students as middle managers has markedly improved the security.

Student aides now undergo extensive training in proper procedures. They also have a panic button and telephone for use in eliciting immediate response from uniformed officers or other personnel. Eleven core vestibule areas now provide controlled access to 25 dormitory buildings, which the security aides control via a remote control electronic lock system. Telephone and vending machines have been relocated within line-of-sight, and all alarm signals were miniaturized and placed on the aide's desk.

Student aides wear uniform shirts with public safety identity. They still answer the telephone, but duties such as issuing recreational equipment are performed by residence life personnel. Team leader and supervisory positions also use students as middle managers for scheduling and running security checks.

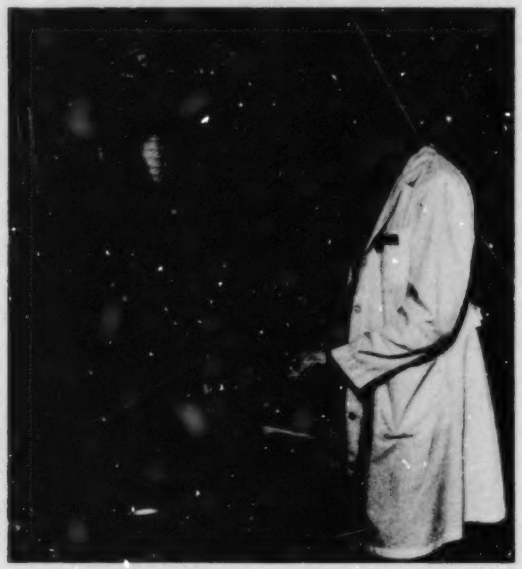
Housekeeping Operations Program

Northern Essex Community College

Northern Essex Community College instituted a housekeeping operations program designed to improve the overall cleanliness of the campus. Existing college maintenance personnel received a tailor-made, intensive training program which also encouraged help from all areas of the campus community. Improved productivity of existing staff resulted in *savings of over $64,000 a year.*

A consulting firm determined that prevailing cleanliness levels were no greater than 70% of a pre-determined standard. Unsafe and unhealthful methods of cleaning had been followed. The training program demonstrated how to use separate sponges and solutions for washbasins and toilets, and all custodians now use rubber gloves in washroom cleaning. Better mops and dusting tools also were supplied. Hospital-type cleaning methods were introduced. Advanced floor maintenance methods were presented to avoid costly stripping and refinishing. In short, custodians were equipped with the best tools and supplies and taught state-of-the-art cleaning techniques bringing cleanliness levels to over 95% of the predetermined standard.

There was also a campuswide participation campaign that alerted the college community to the training program and suggested ways to assist in making it work. The image and self-esteem of the maintenance staff has improved, and awareness has been heightened on the whole campus.



Trash Compactor for Low-Level Radioactive Waste

Tufts University

The school of medicine at Tufts University installed a trash compactor to reduce the volume of low-level, solid radioactive waste and thereby pack more such waste into the 55-gallon drums shipped to decay storage sites. With the cost of shipping and storage continuing to escalate, implementing this idea *saves the university more than $18,000 a year.*

The school of medicine operates about 55 research laboratories, all of which produce low-level radioactive waste from radioactive isotopes. Solid and liquid wastes are disposed of separately—all going to a central storage area for packaging in accordance with regulatory requirements. Over the last three years the number of drums used for shipment had increased by 12%, and the average cost per drum for disposal had increased by 11%. In-house storage of the drums was also a problem.

Since there was no additional space for on-site storage and since principal investigators at the school of medicine could not be expected to reduce their use of radioactive isotopes, the trash compaction idea was tried. 80% of the waste was solid and most of that was compatible and could be packaged in the same drum. The drum compactor cost $4,000 but has a payback period of three to five months. Drums now shipped weigh an average weight of 450 pounds instead of 200 pounds, the average weight before trash compaction.

Purchasing Interruptible Electrical Power

University of Iowa

The University of Iowa negotiated a contract with a regulated utility company to provide low-cost power, which is available to offset university-generated power. Conversely, in the event that an area-wide power shortage were experienced, the university would be called on to offset the utility company's power with its equipment. *Savings to the university are $642,000 a year* in energy costs.

The university had produced about 44% of its power and purchased the rest. Recent court actions determined that local power producers have the right to sell power to regulated utilities. Because of these considerations, the university negotiated with the utility firm for electricity that could be supplied to the university to offset the power that is normally generated by the school's equipment. In times when adequate area power generation is available, the utility would supply power to the university at a reasonable cost under the "energy-only" component of the electrical rate. In times when area demand would exceed the company's power generation capacity, the utility could call on the university to bring its equipment on-line to relieve the shortfall. This would eliminate the "demand" component of the electrical rate since the utility would not have to invest in additional generating equipment. Savings are between one and a half and five mills per kilowatt hour. Also, the life of the university generation equipment is extended because of the infrequent rather than constant usage.

Building Operator Training and Development Program

University of Nebraska Medical Center

A two-phase program was implemented at the University of Nebraska Medical Center to upgrade the knowledge and skill levels of building operators. Phase one is a formal program designed to teach fundamentals of integrated building systems. Phase two is an in-house program to give ongoing, specialized training. Improved operations and maintenance practices resulted in energy *savings of about $140,000 a year.*

Phase one program was developed by an institute specializing in building management. It provides a systematic and comprehensive analysis of how building systems function individually and how they interact and affect the productivity of a total facility. Building operators attended the classes in an on-site classroom during off-duty hours.

Phase two program capitalizes on the idea that each building operator may be expert in one or more skills and may be the sole source of knowledge on an aspect unique to the facility. A training coordinator was identified, a time schedule planned, a list of training requirements developed via brainstorming among the coordinator and operators, and existing and desired knowledge and skills were assessed. From this assessment a sequence was determined for satisfying training requirements.

Staff Computer Literacy

Vanderbilt University

A training curriculum designed to train staff of Vanderbilt University to be computer users (not computer programmers) was developed by the university's administrative systems office. Courses on accounting, programming, and word processing are offered. Improved productivity in all phases of the university's administration achieves *savings of $550,000 a year.*

The training curriculum is designed to cover most basic needs of computer users, with specific needs met on an individual basis after classes are completed. Courses use software packages obtained from a company at no charge other than a yearly maintenance fee. With even a minimum amount of training, users are able to produce work that relieves the backlog of the administrative systems office.

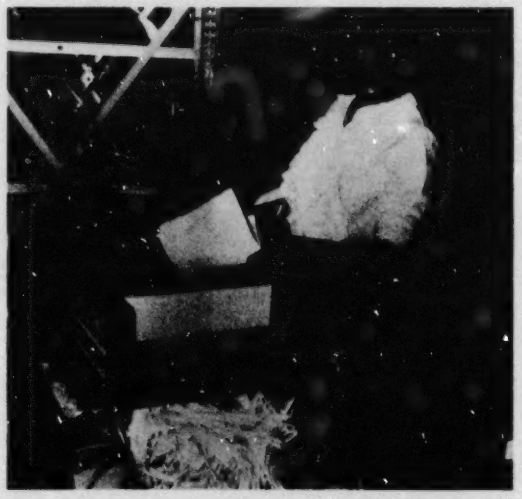
Training is available to everyone in the university who has a need to perform any of the functions involved or who wants a basic understanding of the subject matter. An office automation assistant was hired to teach the courses and assist users. Courses are free (with a charge for books) and meet only half a day for two to four weeks, minimizing employee time away from work.

Automated Steam Load-Shedding Control System

Barnard College

Barnard College installed an automatic control system that allows it to match steam use with steam needs by shedding steam loads at key points in the distribution system. Distribution system lines losses are substantially reduced and steam use eliminated altogether during certain periods of the year or of the day. ***Annual savings are more than $124,000*** while steam consumption is reduced by 20%.

Automated pressure-reducing valves are installed at the beginning of the distribution lines so that when steam service is not required it is shed or secured according to an agreed-on schedule; this is implemented by a time-controlled device attached to the valve. The campus community worked with plant personnel to establish proper scheduling of steam, particularly during meal hours and early morning hours. The distribution system is not pressurized during times of limited load demand.



Using Paraprofessionals to Establish Records Management Center

Benedict College

A records management center was established at Benedict College for the cost-effective collection, review, and maintenance of all official and college-related records. Overall results include: increased office space, reduction in the purchase of filing mechanisms, decreases in records retrieval time, increased accessibility to records, and better protection. Student paraprofessionals were trained to supplement a small staff consisting of a coordinator and a supervisor. ***Savings are $18,000 a year*** over previous means of managing records.

The centralized records center was housed in a low-cost space for the collection of administrative and academic inactive files. Some equipment was purchased, such as a shredder and microform reader. Student interns conducted the records inventory, transferred records to the center, and destroyed unwanted records. All records-retention functions are now applied to current records.

Long-Term Leases for Faculty Housing

Bryn Mawr College

Bryn Mawr College now makes its faculty row houses available to eligible faculty and staff under an arrangement that provides long-term, low-rental leases while the lessee agrees to pay all maintenance and operation costs during the term of the lease. The college provides loans for necessary, initial improvements, and the lessee repays the loan and a low, fixed rent over the next twenty years. The ***savings in maintenance and operations to the college are $28,000 a year*** over that time.

Faced with a large bill for improvements and energy conservation measures on the rental units, the college developed the long-term lease program. The lessee pays for maintenance, utilities, taxes, insurance, and other costs on the leased property. If the lessee leaves before the end of the lease, it is sold to another eligible buyer for rent under the same conditions for the remaining time. The balance of the repair loan can be paid in full or passed on to the purchaser as a condition of sale.

Costing Labor Contracts with Microcomputers

Central Michigan University

Microcomputers are used to expedite the costing of economic proposals during the collective bargaining process at Central Michigan University. Six of nine employee groups there are organized, and many economic proposals pass between bargaining teams before an agreement is reached. Using microcomputers allows greater accuracy in financial data, greatly reduces the time of costing proposals, and ***saves the university $5,700 a year.***

The university develops a compensation base for each group before negotiations begin, and proposals are costed to show both how much a group is

requesting in salary and benefits and how much is added in additional cost. Costing is done on a marginal, percent-increase basis in relation to the compensation base. The university mainframe had been used in the past, and a calculator had been employed to determine manually the aggregate salary and benefits.

Now employee compensation detail is downloaded onto a microcomputer, and the compensation base is loaded into a spreadsheet model. The capability for "what-if" modelling is increased in addition to saving time for costing a proposal so that bargaining momentum can be maintained.

New Energy Saving Steam Traps

College Misericordia

College Misericordia replaced mechanical steam traps of various designs and sizes with a stainless steel, fixed-orifice system (no moving parts) that eliminates steam losses caused by trap failure. The traps also remove condensate continuously rather than cyclically, thereby reducing make-up water requirements. ***Savings to the college are more than $25,000 a year.***

A typical orifice trap installation consists of a Y strainer with a small stainless steel orifice device located downstream. The diameter of the orifice is sized for the specific application and the amount of condensate produced. The traps work on the principle that a measurable maximum volume can pass through a fixed space at a given time. Steam is used to propel the condensate through the orifice. The steam then passes through, resulting in increased extraction of heat from the steam to radiation. With no moving parts, the trap is maintained simply by cleaning the Y strainers annually.

Lint Contol Device for Dryers

Cornell University

Personnel at Cornell University designed and installed a highly efficient lint trap for the exhaust hoses of dryers in residence halls. The device ***saves the university $400 a year*** in energy costs by re-use of warm air.

Buckets of water connected to the exhaust hoses of driers served as lint traps in the past, but they required daily emptying and cleaning. With the new trap, the exhaust hoses of all dryers in a building are connected to a common duct, which is directed into the top of a stainless steel box containing water. Baffles direct the exhaust down to the water, which traps the lint, and clean, warm air is circulated back to the dryers to be used for warm make-up air. A float valve automatically maintains the water level in the box, and a drain valve allows for periodic cleaning. A screen on the bottom of the box is used to lift out accumulated lint. The fire hazard of lint remaining in long ductwork is eliminated, and cold, outside air cannot blow back down into the dryers with the resulting condensate.

Monitored Purchases of Lower-Cost Fuel for Vehicles

DePaul University

Operators of fleet vehicles at DePaul University were instructed to purchase only regular, unleaded gasoline at miniservice or self-service sections of gas stations. The university monitored the receipts of these purchases and found that ***savings reached 29% or about $2,700 a year*** over purchases of full-service, super unleaded fuel.

The university uses three, full-size police vehicles with a minimum octane rating of 87 recommended by the owner's guide. Security officers are instructed to purchase only that type of fuel at the miniservice pumps and record the pump price on their daily activity report. The credit receipts received once a month are also monitored for purchase price. Although prices vary, the differential can be almost 50 cents a gallon between self-service and full-service, super unleaded fuel.

Venture Capital and Profit-Sharing from Contracted Food Service

Embry-Riddle Aeronautical University

Embry-Riddle Aeronautical University developed a bid specification for a food service contract that requires the chosen contractor to invest venture capital into institutionally owned equipment and facilities and to maintain those investments by evenly splitting any excess profits that accrue. ***Savings accruing to the university are $90,500 a year.***

Instead of the institution providing all the space and equipment necessary for the voluntary board operation, the contractor now pays for any renovation of the facilities and agrees to place one-half of all gross margin above a set percentage in an escrow account to pay for future renewal and replacement of facilities and equipment. The new contract was made for the same duration as previous contracts, maintained the same institutional percentage rebate on gross sales, did not raise meal prices, and maintained institutional control over pricing. Incentive is provided to the institution to support the contractor sales growth venture and to the contractor to maintain a high level of satisfaction in order to keep the contract.

Redesigned Gift Receipts

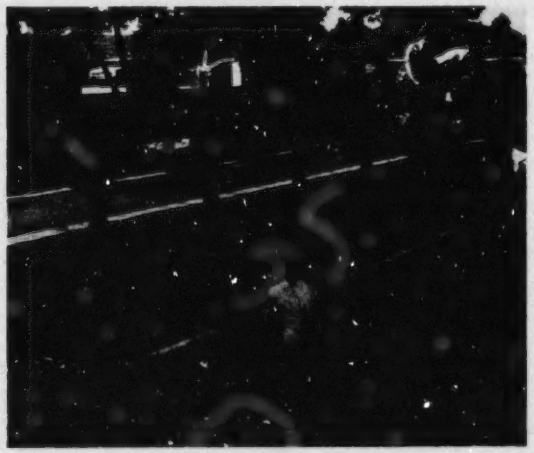
Linfield College

For receipting gifts made to the institution, Linfield College adopted a step-saving process that coordinates the recordkeeping of the college relations office (development) and the business office. A single receipt now serves as the permanent document of record for both offices *saving the college $5,700 a year.*

Both offices work with independent record-keeping systems and had used different receipt forms to satisfy their own data needs. Now they use a single, four-page, carbonless receipt, which doubles as a thank-you letter and establishes a single audit trail. Computerized recordkeeping is enhanced, and the coordination of the two offices is greatly increased. The elimination of a separate thank-you letter for every gift receipt also saves the cost of clerical work and materials.

Using Student Organizations for Campus Improvement

Louisiana State University



The Louisiana State University physical plant used senior students in the civil engineering department to repair a pedestrian bridge on campus. *Savings to the university were almost $2,000 over outside labor.*

Each member of the senior design class submitted a design from which the instructor chose the one used. Design drawings were forwarded to physical plant for review and material acquisition. The student chapter of the American Society of Civil Engineers then demolished the old bridge and constructed a new one with the help of a crane truck and a concrete pour from physical plant. The result was a better-designed and better-constructed bridge than the one removed.

Standardized Controls for HVAC System

Michigan State University

A single, energy-efficient control scheme was applied to forty fixed-volume, terminal-reheating, ventilating, and air-conditioning systems at Michigan State University. The improvement in energy use and maintenance *saves the university $78,500 yearly.*

The control systems for university buildings were all different, reflecting approaches of different contractors, which made troubleshooting difficult. Since most controls were old and due for replacement, the university sought to do this with attention to simplification, standardization, and energy conservation. The preheat coil is now used only to protect the system. Mixing dampers and the chilled water valve are controlled by a single device. Two inexpensive outside air sensors are used to activate the controls, and a pneumatic toggle switch is used to open the chilled water valve during spring start-up. It is expected that standardization will facilitate eventual connection to the computerized central control system.

District Telecommunications Project

Mohave Community College District

Mohave Community College operates three campuses located about 60 miles apart, and all three were joined by a telecommunications project that *saves the district $30,000 a year* on operating expenses and travel.

Outside experts estimated the cost of the link at $1 million, but an in-house study showed that the college could contract and subcontract the project and save as much as two-thirds of this cost. With careful planning and perseverance, the project came in on time and on budget. The system allows small classes on each campus to be combined into one class with an appropriate number of students. Student and faculty travel to distant campuses is eliminated. The duplex-microwave system also includes a telephone system capable of transmitting voice and data communications and of expanding to link all business office computers. The design and implementation of the project has been praised by teleconferencing people.

Reloading Ribbons in Computer Printer Cartridges

Purdue University

Instead of discarding the ribbon cartridges for computer printers, Purdue University used a method to reload the cartridge with a new ribbon for a cost *savings of more than 50% per cartridge or $1,700 a year.*

Two departments on campus contracted with a man who had devised a method to reload the used cartridges; they submitted more than 500 cartridges to him for reloading during a ten-month period. Net savings are expected to increase in future years as computer use increases. Also, less time and

paperwork is spent in requisitioning new cartridges and only one monthly payment per department is made to the vendor. The university is investigating making the service an internal one available to the entire campus community, which would increase the savings substantially.

Liquid Waste Disposal System

San Diego State University

A liquid waste disposal system was developed at San Diego State University to permit on-campus burning of volatile organic and solvent wastes. *Costs of $6,300 annually,* for storage, packaging, shipping, and commercial disposal, *are saved.*

Waste materials such as gasoline, toluene, acetone, and mineral spirits are collected from generating departments by the safety department, and those suitable for burning are put in a storage tank. Materials are drawn from the storage tank by a pump and delivered to a burner where they are atomized by mixing them with compressed air. The mixture is injected into the boiler to be burned in conjunction with natural gas or diesel fuel. This method of disposal also reduces the amount of primary fuel needed, and the system meets pollution control district standards.

Student Employment Office for Auxiliaries

Syracuse University

Syracuse University simplified an elaborate employment process by creating a central student employment office for its five auxiliary enterprises. Centralizing the payroll and staffing functions for student employees *saves up to $250,000 a year.*

Rather than have each auxiliary responsible for its own student personnel and procedures, the central office coordinates hiring and personnel practices for all student employees. Detailed job descriptions for all types of positions were developed; an audio-visual training program orients the student workers to policies, teaches the basics of leadership, communication, and quality control, and advertises positions; recruitment of advertising is coordinated; and centralized storage of evaluations makes it easier to implement merit and cost-of-living pay increases. Improved staff morale and decreased attrition has resulted, improving service.

30+/10 Employment Plan

Texarkana Community College

Texarkana Community College found that it could not compete financially for trained technicians so it developed an employment plan that allowed the institution to both gain an instructor and reduce college maintenance costs. *The savings are almost $34,000 a year.*

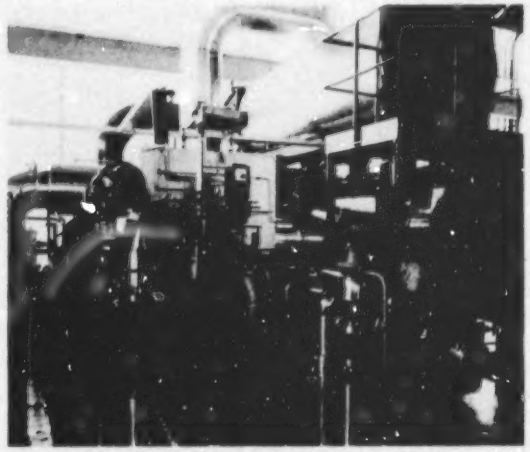
Since college policy required an instructor to work a minimum of 30 hours on campus in instructional duties but industry personnel normally work 40 or more hours a week, the college started hiring industry personnel on a 30+/10 split—to teach their specialty for 30 plus hours a week and also to do ten hours of technical work per week on an extra-service contract maintaining a campus function. The first person hired under this system taught air conditioning/refrigeration and tended the campus air-conditioning system. Others working in commercial electronics and computer sciences also were hired under this system. Another advantage is that instructors tend to involve their students in "hands-on" activities.

Reduction of Primary Chilled Water Pump Capacity

Texas Tech University Health Sciences Center

By reducing pump impeller size, Texas Tech University Health Sciences Center reduced motor power consumption to save energy and prolong motor life. *The savings to the center are $34,700 yearly.*

A primary system of plant and tunnel distribution and a secondary system of secondary pumps and distribution components within each section of the



center operate to heat and cool it. The system was completely analyzed and a model was created. Problems in cooling were determined to be related to water pressures at specific points. The problems were solved by partially closing secondary pump discharge valves and opening the discharge valve on the primary pump in a systematic manner. When satisfactory results were confirmed, the impeller size of the primary pump was reduced to eliminate excess pump capacity. More effective cooling is now provided with less energy.

Post Office Box for Cash Receipts

University of Akron

The University of Akron dedicated a post office box to cash receipts and reduced the time required for getting checks and credit card vouchers to the bank and investigated. Gaining a day's earnings on the funds and saving on armored car service resulted in *total savings of $47,000 a year.*

University administrators studied bank lock-box systems and decided they could emulate the systems at a lesser cost. A post office box dedicated to cash receipts was established. The U.S. Postal Service sorts cash items from other university mail, thus saving them a day of going through the university

mailroom. Each check is copied with a check-sized copier. The checks and credit card vouchers received through the mail and cashier window are taken to the bank by a university employee instead of by an armored car, saving an additional day's time. Cash pickup from satellite points was improved by using a university police team to speed collection.

Construction-In-Progress File Information System

University of Central Florida

The University of Central Florida placed construction-in-progress data by individual contract on a word-processing system to provide life-to-date information that assists administrators in better using their resources. *Almost $24,000 a year is saved* in labor costs with the system.

Even though expenditure records were carried on the university's computerized book of accounts, administrators recognized that in order to monitor specific building costs they needed life-to-date accounting records on each individual contract. Originally, this data was kept manually, which was difficult, and information was not always available to the facilities office. Under the new system, data is entered in a word-processing system, which makes information available on a timely basis at low cost and a database is established that is accessible, accurate, and not easily lost or destroyed. The new file is now updated each month with each new expenditure incurred.

Rebates for Automotive Repair

University of Dayton

Rebates from automobile manufacturers for correction of certain problems were obtained by the University of Dayton after accurate recordkeeping of repairs and careful submission of claim forms. The university *saved more than $900* in this way.

Vehicles are generally repaired at the campus garage, and careful records of maintenance and repair are kept. Using a list of automotive problems eligible for manufacturer's rebate, the university consulted its mechanics about any such major repairs on university vehicles. Maintenance records were pulled on specific vehicles or borrowed back if the vehicle had been sold. The documentation and a consumer claim form were filed with the Better Business Bureau, which forwarded the materials to the appropriate auto manufacturer's office. Rebates on engine or transmission problems of five different vehicles were obtained in this way.

911 Emergency Interface System

University of Maryland

The University of Maryland interfaced its emergency assitance system with the county police's 911 system, an inexpensive move that greatly expanded system capabilities. *Over $125,000 are saved* by the university's installation of a more efficient system.

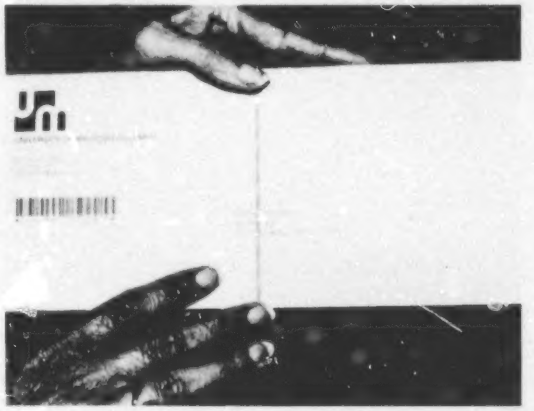
Prior to this interface, callers to 911 were told to hang up and call campus police or the information was passed to campus police third-hand. With the interface, any calls to the county 911 number involving the campus are fast-forwarded to campus police. The interface adds 388 public telephone locations to the system. A large red decal with step-by-step instructions and location description have been posted at each location. Campus police keep the daily log and communication services handles upkeep and repair. The new procedure was extensively publicized.

Bar-Coded Central Mail Processing System

University of Missouri-Columbia

A computerized, bar-coded central mail processing system at the University of Missouri-Columbia accurately records daily mail transactions for more than 1,100 different accounts and *saves the university more than $162,000 annually.*

Before the system, departments either used a rented postage meter or purchased stamps from a



central storeroom. Now the departmental secretary simply faces the mail so that all addresses read the same, bundles them with a rubber band, and affixes a self-sticking bar-coded label to the first item. Mail is sorted and posted at the central facility and the bar code scanned to send an accounting record to a personal computer. Once a week that information is uploaded to the university mainframe and the main accounting system for chargeback to departments.

Heat Pump/Heat Recovery System

University of Rochester

The medical center at the University of Rochester requires simultaneous heating and cooling in its operation. Air conditioning and heating requirements in new clinical facilities were handled by a water-to-air heat pump system. The combining of two types of systems within an older facility, to be compatible with the new facility, *saved construction and operating costs of over $137,000 a year.*

The heart of the system is a series of water-cooled heat pumps, each with a self-contained heating and cooling capability. They are connected by a secondary water loop through which water circulates continuously. Waste heat is rejected into the water loop when the units are cooling and taken out when they are heating. A cooling tower to reject

the excess waste heat is not necessary due to the constant need for simultaneous heating and cooling. Domestic hot water is preheated with the system, and protection against freezing is provided to the existing chilled water systems.

Telecommunications Computerized Management Systems.

University of Southern California

Two major computerized management systems for telecommunications were implemented at the University of Southern California. An existing least-cost routing/long distance computer system was improved and fine-tuned, and a new system for CENTREX gave better response time on moves and changes. These changes *save over $478,000 a year*.

A comprehensive vendor study was undertaken, including traffic analysis of current vendors. A new interstate vendor was selected, and with more vendor choices, direct distance dialing was relegated to last choice. Vendor and route improvement reduced the cost from 40 cents per minute to 27 cents per minute on telephone calls. A CENPAC system that uses a personal computer to process the moves and changes on the CENTREX was also added. This allows telephone service requests to be entered one day and be in service the next, giving better support to station users. It also allows system changes to be made before need and gives better control of the system.

Corporate Travel Card Program

University of Tennessee

The University of Tennessee entered into an agreement with American Express to provide university employees with a corporate travel card. The card may be used to charge travel-related expenses, and employees are reimbursed on request. Elimination of travel advances and refinement of other procedures *saves $72,000 annually*.

The university provides the cards at no cost to employees; cost to the university is $7.50 per card. Employees can make their own travel arrangements and save the time and effort of seeking travel advances. They are usually reimbursed prior to receiving their statement from the card company. Employees also have $100,000 of travel accident insurance by using the card. The company furnishes management reports that will help identify areas traveled to most frequently, as well as hotels, car rental companies, etc., so that favorable rates can be negotiated with such firms.

Synthetic Gym Floor Refinishing

University of Tennessee at Martin

Refinishing the polyurethane material on one of six ball courts in a multipurpose center was accomplished by in-house personnel at the University of Tennessee at Martin. The *savings were almost 70 cents per square foot or more than $13,000* over commercial maintenance for the one court. Other courts are being refinished using the same process.

By observing maintenance during the warranty period and under contract vendors, physical plant personnel gained a knowledge of the necessary materials and procedures. Appropriate equipment and protective coatings were purchased. The building had to be sealed and the workers wore protective clothing and full-face respirators due to the toxicity of the material. A two-part operation to apply a primer and then a matte finish was accomplished, using three people to attend the spray operation and one to keep coatings and other supplies ready.

Central Stores Rental Equipment Tracking System

University of Washington

The University of Washington used state-of-the-art bar-coding techniques to track vendor-owned, compressed gas cylinders and other rental equipment. This increased the accuracy and timeliness of information, and *savings in labor are $48,000 yearly*.

Prior to use of this system, central stores simply added demurrage charges to the existing inventory, which recovered only a portion of the charges and gave the same charges to all clients regardless of turnaround. An inventory was conducted, and all vendor cylinders were identified and bar-coded, along with office rental equipment such as typewriters and transcribers. The information was loaded into the computer and a tracking system initiated. The system reduced the cost to customers by eliminating the demurrage charge, allowed equitable billing, provided a strict accountability, made vendors accountable for items in their possession, and allowed inventory management.

Combination Side/Front Refuse Dumpster

West Virginia University

Refuse dumpsters at West Virginia University were designed for an older model sideloader. University personnel modified the dumpsters to permit all dumpster to be handled by both side and fr

loaders. The *savings are $18,000 a year* over new equipment and certain labor costs.

The university maintains and operates its own refuse disposal service, initially using all sideloader trucks. After purchase of some front-loader dumpsters and a frontloader truck, it became increasingly difficult to schedule pick-ups because of some container conformations for sideloading pick-ups. The solution was a design that allowed either front or side-loader trucks to pick up any container. "Ears" were added to the sides of the dumpsters to engage the front-loading prongs. Modifications were less costly than buying all new equipment.

Computerization of Mail Preparation Charges

Indiana University-Purdue University at Indianapolis

Indiana University-Purdue University at Indianapolis automated existing mechanical mailing machines with a keyboard control device and an electronic accounting system that allowed direct entry of various postal charges and the departmental account number. Departments were then persuaded to turn over mailings to a central facility that could take advantage of presort discounts and provide detailed information to departments on their postage expenses. One cent of the presort discount was rebated automatically to using departments through the accounting system. *Savings to the institution are over $21,000 a year* in equipment and labor.

Systems Contracting

Iowa State University

Systems contracting, wherein the vendor agrees to maintain a specific inventory of supplies and deliver them on request, was implemented at Iowa State University. Prior sales histories are furnished to the vendor, and a guaranteed price is established for the contract period. Less time is required for processing quotes and orders; inventory and space requirements are reduced; turnover is increased with less obsolescence; and vendors are able to combine the requirements of several customers to increase their buying power and pass the savings along to the institution. *Iowa State saves $18,600 a year in this way.*

Billing Summary Report

Iowa State University

Iowa State University now issues a billing summary report to consolidate invoices which results in great labor savings by reducing invoices by 92%. The university already had used blanket purchase orders with its laboratory supplies dealer, but then it developed a billing summary program with the vendor's computer programming department. Now each university department using a blanket purchase order recieves a monthly report of all the items purchased along with unit prices, fund account to be charged, and total invoiced amount. There is no cost to the university and it *saves $34,000 a year.*

Health Program for Faculty and Staff

Southern Methodist University

A comprehensive lifestyle counseling and fitness program for all full-time faculty and staff was developed and directed by Southern Methodist University personnel. Each participant is assigned a counselor who designs an individual program of exercise, testing, and possible dietary and lifestyle changes. Participants earn aerobic points and certificates if certain levels are reached. Just over 7% of the faculty and staff participated in the first year, but they used 28% fewer sick-leave hours and filed one-third fewer medical claims than a control groups, *saving the university almost $28,000 for the year.*

Perforated Six-Tab File Folders

University of Pennsylvania

One office at the University of Pennsylvania has designed and used a six-tab file folder for filing employment applications. A regular manila folder has a life of two uses, but the six-tab folder has the tabs perforated for neat and easy disposal as the folder is put to a new use. This extends the life of the folder threefold and results in fewer orders having to be placed. *Savings for the department are $114 a year,* but use of the folders is being consolidated for all offices where the files are purged or rotated regularly, which would greatly increase the savings.

Recorder and Transcriber for Police Records

University of Pennsylvania

University of Pennsylvania police have a dictaphone recorder with a dedicated telephone line attached to it that allows them to record incident reports on tape. The reports are then transcribed by office personnel for the officer's perusal and signature. The recorder can insert and eject cassette tapes from a self-contained storage bank according to predetermined settings. A special telephone number connects the machine to a phone call for recording. This allows timely and accurate reporting of incidents and allows the officers to return to work immediately. The *savings are over $3,700 a year* in labor costs.

Automated Purchase Request System

University of Washington

Departments at the University of Washington can now directly enter their purchase requests into a database through a campus-wide network of terminals. This replaces a preprinted form used for centralized entry. On-line entry creates an imme-

diate encumbrance against the departmental budget and permits inquiry of the request's status. All information is required before the operator can continue and transmit the request, and editing the information before encumbrance is established reduces the time required to correct errors. Pre-acquisition approvals for grants and contracts can be reviewed on-line. *Savings from avoiding central entry are $118,000 per year.*

Computerized Telephone Directory

Vanderbilt University

Vanderbilt University computerized its telephone directory to increase the call-handling capabilities of the campus operators. Current and accurate information is now maintained by a minimum number of people. In-house programmers designed the software, and a one-time investment was made in eight computer terminals. The data is continually updated and provides a database for other applications that are expected to follow in time. The information response time improved from 30 to 15 seconds on average, and complaints are at an all-time low. The university *saves $45,000 a year* in additional staff and switchboard expenses.

Additional information on any programs that interest you may be obtained from NACUBO, ATTN: Darryl Brown or Mary Beth Campbell, One Dupont Circle, Suite 500, Washington, D.C. 20036-1178; 202-861-2518.

Other 1985 Participants

Adirondack Community College
Purchase of Campus Exterior Lighting
Albany State College
Surplus Vehicle Reclamation
Allan Hancock College
Telecommunications Cost Reduction Program
Amber University
Computer Dealership and In-House Maintenance Program
Anna Maria College
Fuel Conservation Controlled by Microprocessors
Bemidji State University
Air Conditioning Loop
Berea College
Re-Use of Water in the Heating System
Berry College
Joint Scholarship and Facilities Use Program
Bowling Green State University
Computer Literacy and Research
Brevard Community College
Variable Speed Pump for Air Conditioning
Butler County Community Collge
Computerized Energy Management System
Carnegie-Mellon University
Library HVAC Energy Improvements
Castleton State College
Residence Hall Maintenance Assistant Program
Cedar Crest College
Energy Management System
Central Michigan University
Power House Natural Gas Rate Reduction
Capacitor Installation in Food Commons
Residence Hall Director Apartment Self-Sufficiency Project
Fluorescent Lighting Replacement
University Stores Inventory System
Special Food Purchase Project
Downloading Information from Mainframe to Microcomputer
Safety Manual
Sick Leave Information and Control System

Cleveland State University
In-House Sign Shop
Colorado State University
Library Stack Light Switching
Davis and Elkins College
Construction of Wooden Tables for Computers and Dining Hall
Daytona Beach Community College
In-House Library Automation
Delta College
Office Supply Purchasing Policy for College Stockroom
Duke University
Efficient Purchase of Cleaning Supplies
Pooling Maintenance Contract Funds
Adult Basic Education and Participative Management
Elmira College
Energy Cost Reduction Program Using Federal Grants
Evergreen State College
Building Economizer Cycle Using Return Air Temperature
Automatic Resetting of Heating Water Temperatures Based on Outside Air
Fitchburg State College
Quick Fix Energy Conservation Modifications
Florida Board of Regents
Third-Party Financing of Equipment Through a Master Lease
Florida International University
Decentralization of Chilled Water Air Conditioning System
George Mason University
Automated Accounting for Administrative Photocopying
Hampshire College
Comprehensive Energy Conservation
Holyoke Community College
Retrofit of Exit Lights
Honolulu Community College
Distributed Computing System
Illinois Benedictine College
Lease-Purchase of a Trash Compactor

Illinois Wesleyan University
Variable Air Volume Energy Management System
Indiana University-East Richmond
Sulfuric Acid System for PH Control, Water and Sewage Savings
Ceiling Tile Maintenance
Indiana University-Purdue University at Indianapolis
Using Local Arbitrators to Reduce Arbitration Costs
Computerization of Central Stores Catalog
Iowa State University
University Bookstore On-Line, Used-Book, Buy-Back System
Annual Paper and Supplies Contract
Quality Circles for Employees
Kearney State College
Conversion of Payroll Punch Card System to Database System
Lancaster Bible College
Landscape and Tree Maintenance
Lansing Community College
Purchased Pagers and Leased Paging Service
Lewis-Clark State College
Dresser Reconditioning Project
Longwood College
Nurse Practitioner Directs Student Health Service
Los Angeles College of Chiropractic
Energy Management System
Loyola College
Rental Furnishings in Housing Facilities
Central Stores Operation for Office Supplies
Marywood College
Operating Own Vending Machines
Mercer University
Systematic Adoption of Academic and Administrative Computing
Miami University
Portable Pressbox and Spectator Stands
Timer Controls for Window Air Conditioners
Repairs to Domestic Water Lines and Laboratory Liquid Lines
Michigan State University
Recycling Used Floor-Machine Buffer Pads
Monroe Community College
Plaza Deck Reconstruction
Mt. Hood Community College
Telephone System Purchase
New England Educational Insurance Association, Inc.
Consortium for Workers' Compensation Insurance
New Mexico Institute of Mining and Technology
In-House Conversion of Building to Offices and Warehouse
Campus Solar Hot Water Loop
North Carolina State University
Acquired Vehicular Equipment from Federal Surplus Agency
Oakland Community College-Orchard Ridge Campus
Word-processing Center to Serve Faculty
Oakton Community College
Reduction in Maintenance of Computer Memory
Olivet College
Alternative Water Source for Boiler
Piedmont Technical College
Constructed Tables for Computers
Purdue University
Satellite Dish Communication of Atmospheric Weather Data
Purchase of Data and Voice Circuits and Phone Instruments
Lease Vehicles to Overseas Staff Instead of Shipping Personal Ones
Upgrade Cash Management System
Computer Recycling and Salvage
Renovation of Low-Mileage, Old Vehicles
Rensselaer Polytechnic Institute
Cylinder Control Program
Richland College
Reapplication of Existing Major HVAC Controls
San Francisco Theological Seminary
Domestic Water Conservation
Southern Utah State College
Central Steam Plant Summer Shutdown
Building Comfort and Conservation Project

State University of New York College at New Paltz
- Using Electronic Spreadsheet in Four Areas

State University of New York at Stony Brook
- Bursar-Student Accounting System

Suffolk University
- Thermal Draperies Instead of Storm Windows

Syracuse University
- Window and Lighting Fixture Cleaning

Texas Tech University
- Ground Water Use in Central Plant Cooling Towers
- Variable Speed Control in Forced Air Draft Fan

Thornton Community College
- Reduced Fan Speed and Horsepower on HVAC System

University of Alabama
- Use of Excess Chill Water to Air Condition Another Building

University of Alabama at Birmingham
- Direct Payment of State Utility Tax

University of California at Berkeley
- Established On-Campus Stationery Store

University of Houston-Clear Lake
- Budget Controls

University of Houston-University Park Campus
- Special Scaffold for Relamping
- Consolidation of Positions
- Parts Standardization and Stocking Program
- Cooling Tower Evaporation Credit
- Lighting Adjustment Program

University of Michigan
- Turn Off Reheats

University of Missouri-Columbia
- Automated Work Order System

University of Nebraska Medical Center
- Stockless Purchasing-Materials Management

University of Nevada–Reno
- Central Heat Plant Isolation

University of North Carolina at Chapel Hill
- Avoiding Annual Service Contract Costs
- Implementation of an Energy Management System
- Procedures and Training Manual for Chilled Water Loop Operations

University of Pennsylvania
- Internal Financing Program for Equipment Purchases
- Outdoor Trash Receptacle Modification
- On-Line Salary Increase Application

University of Southern Maine
- Use "Free Labor" to Supplement Services

University of Southern Mississippi
- Chiller Replacement in Classroom Building
- Lighting Renovation in Library

University of Tennessee Center for the Health Sciences
- Mini-Steps for Major Energy Savings

University of Tennessee at Knoxville
- Vocational Training Opportunity
- Common Paymaster for University and Physicians Foundation

University of Tennessee at Martin
- Retrofitting a Residence Hall to Fluorescent Lighting

University of Texas at Austin
- Automated Departmental Accounting System
- Computerized Policy Manuals

University of Virginia
- Innovative Financing of Dormitory Construction

University of Washington
- Used Semi-Trailer for Storage and Transport

University of Wisconsin-Green Bay
- Converted to Electric Chillers

Vanderbilt University
- Reduction in Telephone Maintenance Costs

Virginia Polytechnic Institute and State University
- Workers' Compensation Assessment Program

Washington State Community College District #17
- Negotiated Discount on Maintenance Contracts for Word Processors
- Elimination of Unnecessary Payments of Federal Excise Taxes on Telephones
- Access to Long-Distance Telephone Lines

Washington State University
- Converted Greenhouse Heating to Radiant Natural Gas

Waukesha County Technical Institute
- Vocational Technical College Software Sharing Project

Wayne State University
- Equipment Rental Pool—Financing Office Automation
- Leasing Bookstore Operation

West Virginia University
- Office Furniture Refurbishing Using Electroplating
- University Pre-Sort Mail Service
- Formalized Specification Review Program
- Industrial Engineering Department at Hospital
- Computerized Purchasing Management Program

Western Illinois University
- Coal Reconversion Project

Western Michigan University
- Reduced Water Usage

Western Washington University
- Attacking the Deferred Maintenance Dilemma

Wheaton College
- Salt Storage Building Project

Winona State University
- Residence Hall Telecommunications Service

Yakima Valley Community College
- Campus Pride Volunteer Cleanup Day

1984 Winners

Indiana University-Purdue University at Indianapolis
Ultrasound Device to Detect Faulty Steam Traps
Lane Community College
Small Purchase Orders Using Credit Cards
Linfield College
Spatter Gun and Topping Compound Used to Resurface Walls
Columbia University
Travel Management Program
Cumberland County College
Library Book Mover
Providence College
Fluidized Bed Boilers and Cogeneration
University of California, Berkeley
Silver Reflectors on Fluorescent Light Fixtures
University of Washington
Bar-Coding in Physical Plant Operations
Central Michigan University
Carbon Dioxide Air Quality Analyzer and Controller
Friends University
Consolidation of Business and Student Services
Louisiana State University
Automated Cooling Tower Blowdown
Miami University
Dolly to Move Library Shelves
Orange Coast College
Eutetic Salts Off-Peak Cooling System
Southern Oregon State College
Telephone Communications and Dispatching System
Union Theological Seminary in Virginia
Air Conditioning System Used for Heating
University of Cincinnati
Retrieval File System for Personnel Records
University of Kentucky
Self-Insurance Programs for Parcel Shipments
University of Missouri-Columbia
Computerized Room Reservation System
University of Missouri System
Single-Ply Roofing Evaluation and Prequalification
University of Richmond
Cogeneration of Steam with Electrical Generator

University of Southern California
Advanced Mail Services System Computerization
Community College of Allegheny County
Conversion to Computer-Generated Microfiche Reports
Cornell University
Helium Recovery System
Duke University
Use of Football Stadium Press Box for Telethons
Edmonds Community College
Computerized Child Care Record and Billing System
Guilford Technical Community College
Computerized Continuing Education Course Registration
Indiana Institute of Technology
Compressed Wood Fiber Gym Floor
Indiana University
Conversion of Abandoned Water Tank for Storage
Indiana University of Pennsylvania
Two-Way Envelopes for Billings
Lancaster Bible College
Removing Residue from Hot Water Heaters
Lehigh University
Gas Cylinder Control Program
Moraine Valley Community College
College Center Cooperative Financing Project
New Mexico State University
Outdoor Air Damper Control
Plymouth State College
Water and Heat Recovery
Purdue University
A New Approach to Selecting Computer-Based Records
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Computerized Radiation Dosimetry and Radioactive Materials Inventory System
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St. Francis College
Science Greenhouse Insulation
SUNY Agricutural and Technical College at Canton
On-Farm Methane Generator System

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Tufts University
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